July 7, 1931. L. WOODS 1,813,266

SELF SUPPORTING HOSE

Filed June 19, 1929

Fig. 1.

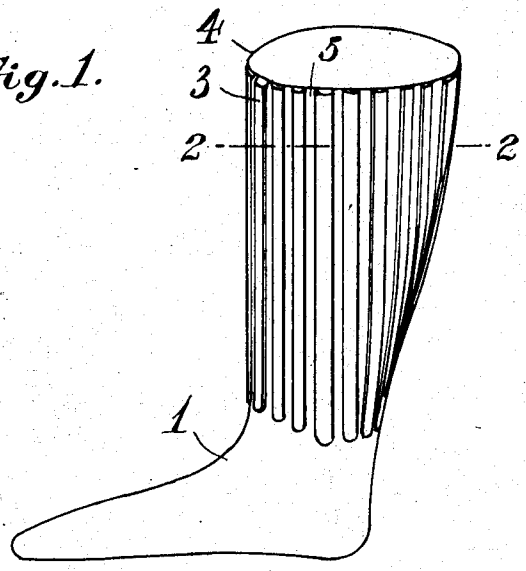


Fig. 2.

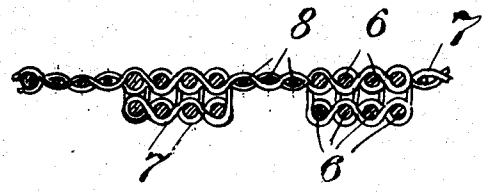


Fig. 3.

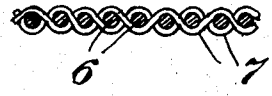
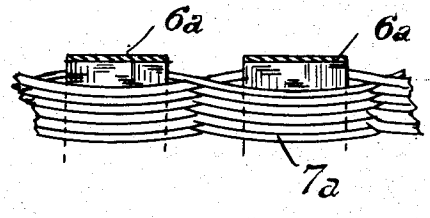


Fig. 4.



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UNITED STATES PATENT OFFICE

LEONARD WOODS, OF ST. LOUIS, MISSOURI

SELF-SUPPORTING HOSE

Application filed June 19, 1929. Serial No. 371,978.

This invention relates to certain new and useful improvements in self-supporting hose, the peculiarities of which will be hereinafter fully described and claimed.

The main objects of my invention are to provide vertically disposed portions of hose or other articles, that are of stiffer material than the balance of the article, so that such article tends to maintain its vertically located position in use on account of said stiffening portions; secondly, to provide ribs of different yarn or thread tending to remain stiff and non-elastic, as distinguished from the usual woolen, silk, or other yarn or thread forming the balance of the woven fabric of the hose or other article; thirdly, to employ such stiffening yarn as the warp running lengthwise of the finished hose in weaving, and to use more flexible yarn or thread as the filling woof crossing and interlaced with said stiffer warp yarn; fourthly, to weave said stiffer yarn or thread in vertically disposed ribs so as to interlace the stiffer yarn with the more flexible yarn or thread forming the balance of said hose; and fifthly to use independently prepared stiffening strips of suitable material vertically disposed, and weave or form around them the yarn or thread of relatively flexible material forming the body of the hose or the article, so that the stiffening strips will be permanently contained in said article.

My prior application on self-supporting hose Ser. No. 368,803, refers particularly to stiffening strips detachably mounted in passages formed vertically in hose.

The present application refers to hose having stiffening ribs permanently located in the fabric of the hose, and vertically disposed so as to support the hose in its located position on the leg of the wearer.

In the accompanying drawings on which like reference numerals indicate corresponding parts,

Fig. 1 represents a hose or woven stocking portion embodying my invention;

Fig. 2, a detail cross sectional view of a portion of said hose on the line 2—2 of Fig. 1;

Fig. 3, a similar section showing stiffening warp threads and circumferential weft of interlaced woof threads making up the fabric; and

Fig. 4, an enlarged detail view showing stiffening ribs formed by the strips of material independently formed, and permanently located in the fabric that is interlaced about said strips.

It is old to form ribs in legs of socks by doubling or trebling, or otherwise increasing the thickness of the sock fabric in vertically disposed portions that alternate with thinner portions of the fabric forming the balance of the sock. Such hose have somewhat more stiffening effect vertically than circumferentially, due to the elastic connection of the woven or knit fabric between the thickened thread portions. The stiffness, however, is comparatively small and soon disappears by repeated laundering.

My present invention provides for maintaining the stiffness vertically of hose as will now be described.

Referring to the drawings the numeral 1 designates a sock having the usual or any suitable length and shape. From the portion of said sock located near the ankle of the wearer, I provide vertically disposed ribs 3 extending upward substantially to the top 4 of the sock and preferably alternating with intermediate portions 5 of the fabric forming the body of the hose. The ribs 3 are designed for vertical stiffness and support of the fabric, while the said intermediate portions 5 provide for circumferential flexibility. These ribs may be woven, mainly of yarn or thread that has stiffer quality or consistency than the yarn or thread forming the balance of the article. For instance, Fig. 2 shows such stiffening ribs as being formed by warp threads 6 vertically disposed in sets of suitable width and thickness, which are interlaced by the woof filling threads 7. Between each two sets of stiffening warp threads the relatively flexible warp threads 8 are alternately disposed in sets as shown in Fig. 2, and likewise interlaced by and with the said woof filling threads or yarn 7. Circumferential flexibility is thus given to the sock, while stiffening ribs extending from the ankle

location upward to the top give continual support by frictional engagement from the ankle upward, to the fabric intermediate of the ankle portion and top.

Fig. 3 illustrates the use of stiffening warp threads 6 vertically disposed and interlaced with the relatively flexible woof threads 7, and without alternating with warp threads of the same relatively flexible material. This arrangement forms a more continuous and less elastic sock circumferentially, but has the self-supporting function of the ribbed hose illustrated in Fig. 2.

In Fig. 4 I have shown strips of stiffening material 6*a*, independently woven or formed and inserted vertically, and permanently located and held by weaving or otherwise disposing around said strips, yarn or thread 7*a* of the wavelike woven and relatively flexible material due to triangular spaces formed next to the warp portions in the body of the fabric.

It is well known that woven carpets for instance, do not stretch in the direction of the warp, but do stretch considerably across the warp. This non-extensibility in one direction and extensibility in the other direction is because the warp threads are stretched tight and straight in the loom and are practically nonelastic; they form an integral necessary part of the carpet and have little, if any, stiffening function. The woof threads interlaced crosswise of the warp are wavelike instead of straight, as they intermingle back and forth with the warp and form the surface of the carpet. Due to their wavelike disposition across the warp, the woof threads allow stretching or extension and also retraction in the direction of their length across the warp.

In the same manner and for the same reasons, the stiffening warp threads and non-extensible strips disposed lengthwise of a sock of my construction described, limit longitudinal extension of the leg portion, while the wavelike woof portions, circumferentially disposed, allows stretching or extensibility circumferentially, and tend to retract upon the wearer's leg after stretching adjustment on the leg. The stiffening portions forming the warp will hold the leg portion in position throughout its length, while the circumferentially extensible body fabric formed by the woof, will adjust itself to the size and shape of the wearer's leg.

I have illustrated and described several ways of providing stiffening ribs vertically disposed and adapted to form self-supporting hose or similar article. Whether the fabric is woven on a loom machine having lengthwise warp threads and filling woof threads, or otherwise manufactured, a form and function of sock can be obtained accordingly. I do not, therefore, limit myself to any particular method of carrying out my invention as herein described and illustrated.

I claim:

1. A self-supporting hose comprising a woven stocking portion having a substantially cylindrical leg portion formed of longitudinally disposed straight stiffening warp portions and circumferential weft integrally interlaced with and frictionally engaging intermediate portions of the stiffening warp portions extending from the ankle portion to the open end to support all parts of the leg of the stocking when adjusted on the leg of the wearer and avoid its slipping downward toward the ankle.

2. A self-supporting hose comprising a woven stocking portion having a substantially cylindrical leg portion formed of longitudinally disposed non-extensible straight stiffening warp portions alternating with wavelike woven circumferentially extensible flexible weft integrally interlaced with and frictionally engaging intermediate portions of the stiffening warp portions extending from the angle portion to the open end, the triangular spaces formed adjacent to the warp portions by the wavelike woven weft affording circumferential extensibility thereto while the warp portions limit any longitudinal movement of said intermediate portions of the leg portion, substantially as described.

In testimony whereof I have affixed my signature.

LEONARD WOODS.